

NATIONAL DIPLOMA: FIRE TECHNOLOGY

Qualification code: NDFY01 - NQF Level 6

Campus where offered: Arcadia Campus (day classes)

Last year of new intake: 2018

Teach-out (phase-out) date: 31 December 2022

Students registered for this qualification should complete their studies according to the teach-out date prescribed for the qualification, subject to the stipulations of Regulation 3.1.11 and 3.1.13 in the Students' Rules and Regulations.

Information on phased-out programmes can be obtained from the TUT website, www.tut.ac.za.

Key to asterisks:

* Information does not correspond to information in Report 151.

(Deviations approved by the Senate in May 2011.)

CURRICULUM

Consult the 2018 Faculty Prospectus for the full contents of the qualification.

FIRST YEAR

CODE	SUBJECT	CREDIT	PREREQUISITE SUBJECT(S)
FIRST SEMESTER			
FBH111T	Fire Hydraulics I	(0,143)	
FBT111T	Fire Technology I	(0,143)	
PHV101T	Physics: Emergency Services I	(0,143)	
TOTAL CREDITS FOR THE SEMESTER:		0,429	
SECOND SEMESTER			
CEM101T	Chemistry: Emergency Services I	(0,143)	
EMR101T	Emergency Management I	(0,143)	
FBO111T	Fire Construction I	(0,143)	
TOTAL CREDITS FOR THE SEMESTER:		0,429	
TOTAL CREDITS FOR THE FIRST YEAR:		0,858	

SECOND YEAR

CODE	SUBJECT	CREDIT	PREREQUISITE SUBJECT(S)
FIRST SEMESTER			
EXP1FTC	Fire Technology: Practical I (offered in both semesters)	(0,071)*	
FBC211T	Fire Chemistry II	(0,214)*	Chemistry: Emergency Services I
FBO211T	Fire Construction II	(0,143)	Fire Construction I
FBP211T	Fire Physics II	(0,214)*	Fire Hydraulics I Physics: Emergency Services I
TOTAL CREDITS FOR THE SEMESTER:		0,642	
SECOND SEMESTER			
EMR201T	Emergency Management II	(0,143)	Emergency Management I



EXP2FTC	Fire Technology: Practical II (offered in both semesters)	(0,071)*	Fire Technology: Practical I
FBH211T	Fire Hydraulics II	(0,143)	Fire Hydraulics I Physics: Emergency Services I
FBT211T	Fire Technology II	(0,143)	Fire Technology I Physics: Emergency Services I
TOTAL CREDITS FOR THE SEMESTER:		0,500	
TOTAL CREDITS FOR THE SECOND YEAR:		1,142	

THIRD YEAR

CODE	SUBJECT	CREDIT	PREREQUISITE SUBJECT(S)
FIRST SEMESTER			
FBH311T	Fire Hydraulics III	(0,167)	Fire Hydraulics II Fire Physics II
FBO311T	Fire Construction III	(0,167)	Fire Construction II
FBT311T	Fire Technology III	(0,167)	Fire Physics II Fire Technology II
TOTAL CREDITS FOR THE SEMESTER:		0,501	
SECOND SEMESTER			
EMR301T	Emergency Management III	(0,167)	Emergency Management II
FBC311T	Fire Chemistry III	(0,166)	Fire Chemistry II
FBP311T	Fire Physics III	(0,166)	Fire Hydraulics II Fire Physics II
TOTAL CREDITS FOR THE SEMESTER:		0,499	
TOTAL CREDITS FOR THE THIRD YEAR:		1,000	
TOTAL CREDITS FOR THE QUALIFICATION:		3,000	

SUBJECT INFORMATION (OVERVIEW OF SYLLABUS)

The syllabus content is subject to change to accommodate industry changes. Please note that a more detailed syllabus is available at the Department or in the study guide that is applicable to a particular subject. At time of publication, the syllabus content was defined as follows:

C

CHEMISTRY: EMERGENCY SERVICES I (CEM101T) (Subject custodian: Department of Chemistry)

1 X 3-HOUR PAPER

Matter and energy: atomic theory, the periodic table. Reaction equations and stoichiometry. Solutions, acids, bases and salts. Chemical equilibrium, electrochemistry and the redox theory. Descriptive chemistry of selected elements, organic chemistry. (Total tuition time: ± 45 hours)

E

EMERGENCY MANAGEMENT I (EMR101T)

1 X 3-HOUR PAPER

(Subject custodian: Department of Management and Entrepreneurship)

Personnel management: recruitment, selection, placing, maintenance. Communication, problem-solving, conflict management. (Total tuition time: ± 45 hours)



EMERGENCY MANAGEMENT II (EMR201T) **1 X 3-HOUR PAPER**
(*Subject custodian: Department of Physics*)
Legislation, regulations, codes, ventilation. (Total tuition time: ± 45 hours)

EMERGENCY MANAGEMENT III (EMR301T) **1 X 3-HOUR PAPER**
(*Subject custodian: Department of Physics*)
Vision, mission and objectives. Procedures. Socio-economic systems. Basic tasks of managers. (Total tuition time: ± 45 hours)

F

FIRE CHEMISTRY II (FBC211T) **1 X 3-HOUR PAPER**
(*Subject custodian: Department of Chemistry*)
Solutions, chemical kinetics, flammable liquids, gases and vapours. (Total tuition time: ± 45 hours)

FIRE CHEMISTRY III (FBC311T) **1 X 3-HOUR PAPER**
(*Subject custodian: Department of Chemistry*)
Chemical incident management, organic chemistry, chemical radioactivity, fire retardants, plastics, poisonous materials. (Total tuition time: ± 45 hours)

FIRE CONSTRUCTION I (FBO111T) **1 X 3-HOUR PAPER**
(*Subject custodian: Department of Physics*)
Construction principles. Construction technology: building process, building drawings, construction elements. (Total tuition time: ± 45 hours)

FIRE CONSTRUCTION II (FBO211T) **1 X 3-HOUR PAPER**
(*Subject custodian: Department of Physics*)
Fixed installations: sprinklers, standpipe systems, fire pumps. Portable fire extinguishers, special extinguishing systems. Fire detection systems, extinguishing procedures, extinguishing equipment. Fire behaviour. Ventilation methods. High-rise structures. (Total tuition time: ± 45 hours)

FIRE CONSTRUCTION III (FBO311T) **1 X 3-HOUR PAPER**
(*Subject custodian: Department of Physics*)
Management and administration. National building regulations: administration, public safety, stairways, glazing, fire, water. Architectural plan evaluation. (Total tuition time: ± 45 hours)

FIRE HYDRAULICS I (FBH111T) **1 X 3-HOUR PAPER**
(*Subject custodian: Department of Physics*)
Emphasise basic mathematics to be used in Fire Physics and Fire Hydraulics: Arithmetic, equations, graphs, basic algebra, trigonometry, mensuration and SI units. Introduction to hydraulics, properties of fluids, hydrostatics, hydrodynamics. (Total tuition time: ± 45 hours)

FIRE HYDRAULICS II (FBH211T) **1 X 3-HOUR PAPER**
(*Subject custodian: Department of Physics*)
Hydrodynamics, nozzles, energy loss in pipelines, water relaying, field calculations. (Total tuition time: ± 45 hours)

FIRE HYDRAULICS III (FBH311T) **1 X 3-HOUR PAPER**
(*Subject custodian: Department of Physics*)
Hydrostatics, hydrodynamics, pumps. (Total tuition time: ± 45 hours)

FIRE PHYSICS II (FBP211T) **1 X 3-HOUR PAPER**
(*Subject custodian: Department of Physics*)
Waves and sound, rotational motion, electricity, magnetism. (Total tuition time: ± 45 hours)

FIRE PHYSICS III (FBP311T) **1 X 3-HOUR PAPER**
(*Subject custodian: Department of Physics*)
Transfer of heat, diffusion flames and fire plumes, thermal physics, laws of thermodynamics. Application of effects of heat on forces in roof trusses and in materials; radioactivity, fire detectors. (Total tuition time: ± 45 hours)

FIRE TECHNOLOGY I (FBT111T)**1 X 3-HOUR PAPER****(Subject custodian: Department of Physics)**

Fire apparatus maintenance, fleet administration, air devices, fire boats and explosions. (Total tuition time: ± 45 hours)

FIRE TECHNOLOGY II (FBT211T)**1 X 3-HOUR PAPER****(Subject custodian: Department of Physics)**

Incident management: air, sea, rescue, fire suppression, communication. (Total tuition time: ± 45 hours)

FIRE TECHNOLOGY III (FBT311T)**1 X 3-HOUR PAPER****(Subject custodian: Department of Physics)**

Fire suppression techniques. Risk management for fire services. Fire department occupational safety: OHSA, NFPA 1001 and 1521. (Total tuition time: ± 45 hours)

FIRE TECHNOLOGY: PRACTICAL I (EXP1FTC)**WORK-INTEGRATED LEARNING****(Subject custodian: Department of Physics)**

Various tasks related to fire and rescue emergency services are performed. These are listed in Task Book I. Expected competencies and behaviours are assessed in these tasks. These tasks should be performed under supervision at designated fire stations. Assigned tasks are based on classroom, simulation, daily job, incident, prescribed fire and managerial tasks. (Total tuition time: ± 50 hours)

FIRE TECHNOLOGY: PRACTICAL II (EXP2FTC)**WORK-INTEGRATED LEARNING****(Subject custodian: Department of Physics)**

Competencies and behaviours will be assessed from given fire and rescue emergency service tasks, as in Task Book II. Assigned tasks are based on Incidents managed under the Incident Command System (ICS). Examples include veld fire, structural fire, oil spill, search and rescue, hazardous material, and an emergency or non-emergency (planned or unplanned) event such as a vehicle accident. (Total tuition time: ± 50 hours)

P**PHYSICS: EMERGENCY SERVICES I (PHV101T)****1 X 3-HOUR PAPER****(Subject custodian: Department of Physics)**

Remedial mathematics, basic units, vectors and scalars. Kinetics, momentum, moments, work, energy and power. Pressure, density, optics. (Total tuition time: ± 45 hours)